

In re: Application of Shaw et al.
Serial No.: 09/600,837
Filed: August 5, 2002
Page 4 of 8

In the Claims:

1. (Original) Method of connecting channels including a) forming at least one flow path in a first substrate; b) forming at least one flow path in a second substrate; c) contacting the first and second substrates to form at least one channel and d) forming at least one cut in an external face of the first substrate, the cut being of sufficient depth to intersect one or more of the channels such that, in use, a fluid passing along a fluid pathway defined by the at least one cut may pass into the at least one channel, characterised in that the substrates are bonded before the at least one cut is formed therein.

2. (Original) Method according to claim 1 including the step of making at least one cut in an external face of the second substrate, the cut being of sufficient depth to intersect one or more of said channels such that only the required interconnections are made by the at least one cut.

3. (Original) Method according to claim 2 including the steps of a) forming at least one flow path in a third substrate and b) joining the third substrate to the first and second substrates.

4. (Currently Amended) Method according to claim 1 ~~any preceding claim~~ wherein the at least one cut formed in the first substrate and the at least one cut formed in the second substrate are off-set.

5. (Currently Amended) Method according to claim 1 ~~any preceding claim~~ wherein the at least one cut formed substantially perpendicular to the plane of the substrate.

In re: Application of Shaw et al.
Serial No.: 09/600,837
Filed: August 5, 2002
Page 5 of 8

6. (Currently Amended) Method according to claim 1 ~~any preceding claim~~ wherein the cuts are formed by sawing.

7. (Currently Amended) Method according to claim 1 ~~any preceding claim~~ wherein the cuts are formed by mechanical milling.

8. (Currently Amended) Method according to claim 1 ~~any preceding claim~~ wherein the cuts are formed by laser ablation.

9. (Currently Amended) Method according to claim 1 ~~any preceding claim~~ wherein the cuts are formed by photolithography.

10. (Currently Amended) Method according to claim 1 ~~any preceding claim~~ wherein the cuts are formed by chemical etching.

11. (Currently Amended) Apparatus for transporting at least one fluid, the apparatus including at least a first substrate and a second substrate which have portions removed therefrom, so as to define at least one channel, the at least one channel being interconnected according to the method of claim 1 ~~claims 1 to 10~~.

12. (Original) Apparatus according to claim 11 further including a third substrate situated between the first and second substrates.

13. (Original) Apparatus according to claim 11 further including a third substrate situated adjacent the second substrate, the third substrate having portions removed therefrom so as to define at least one channel.

B3
amended

In re: Application of Shaw et al.
Serial No.: 09/600,837
Filed: August 5, 2002
Page 6 of 8

14. (Original) Apparatus according to claim 11 wherein the first substrate is glass.

15. (Original) Apparatus according to claim 11 wherein the second substrate is silicon.

16. (Original) Apparatus according to claim 12 wherein the third substrate is a mesh.

17. (Original) Apparatus according to claim 12 wherein the third substrate includes a polymer.

18. (Original) Apparatus according to claim 13 wherein the third substrate is glass.

19. (Currently Amended) Apparatus according to claim 11 ~~any of claims 11 to 18~~ wherein the substrate is a square approximately $5 \times 10^{-2}\text{m} \times 5 \times 10^{-2}\text{m}$.

20. (Original) Apparatus according to claim 11 wherein the channels are substantially straight.

21. (Original) Apparatus according to claim 11 wherein the channels are substantially curved.

22. (Original) Apparatus according to claim 11 wherein the channels are between $1 \times 10^{-2}\text{m}$ and $5 \times 10^{-2}\text{m}$ in length.

B3
contd

In re: Application of Shaw et al.

Serial No.: 09/600,837

Filed: August 5, 2002

Page 7 of 8

B3
contd

23. (Original) Method of connecting channels formed in at least one substrate by making at least one cut in at least one external face of said substrate, the cut being of sufficient depth to intersect one or more of said channels such that only the required interconnections are made by each cut.

24. (Currently Amended) A micro-fluidic device incorporating the apparatus as claimed in claim 11 ~~claims 11 to 22~~.
